

REMARKS

This is in full and timely response the non-final Office Action mailed on April 5, 2004. Reexamination in light of the following remarks is respectfully requested.

Claims 13-27 are currently pending in this application, with claims 13, 18 and 23 being independent. No new matter has been added.

Rejections under 35 U.S.C. §112 and §103

While not conceding the propriety of these rejections, and in order to further the prosecution of the application, claims 1, 3-4 and 6-12 have been canceled without prejudice or disclaimer of their underlying subject matter, rendering the rejection moot as to these claims. Withdrawal of these rejections is respectfully requested.

Newly added claims

Newly added claim 13 and the claims dependent thereon include the features of:

a control voltage supply circuit using said external control voltage to generate an internal control voltage, said internal control voltage relative to said external control voltage from a first reference voltage to a second reference voltage being different from when said external control voltage is less than said first reference voltage or exceeds said second reference voltage; and

a variable gain circuit having an uncompensated gain characteristic and a compensated gain characteristic, said uncompensated gain characteristic relative to said external control voltage being linear from said first reference voltage to said second reference voltage, and being non-linear when said external control voltage is less than said first reference voltage or exceeds said second reference voltage, said variable gain circuit using said internal control voltage to produce a compensated gain characteristic, and said compensated gain characteristic relative to said external control voltage being linear

from said first reference voltage to said second reference voltage, and being linear when said external control voltage is less than said first reference voltage or exceeds said second reference voltage, wherein said compensated gain characteristic is a transmission gain.

Newly added claim 18 and the claims dependent thereon include the features of:

a mixer that mixes a radio frequency signal with a local oscillation carrier to produce an intermediate frequency signal; an amplifier that adjusts the signal level of said intermediate frequency signal, said amplifier having a control voltage supply circuit and a variable gain circuit, said control voltage supply circuit using said external control voltage to generate an internal control voltage, said internal control voltage relative to said external control voltage from a first reference voltage to a second reference voltage being different from when said external control voltage is less than said first reference voltage or exceeds said second reference voltage; and said variable gain circuit having an uncompensated gain characteristic and a compensated gain characteristic, said uncompensated gain characteristic relative to said external control voltage being linear from said first reference voltage to said second reference voltage, and being non-linear when said external control voltage is less than said first reference voltage or exceeds said second reference voltage, said variable gain circuit using said internal control voltage to produce a compensated gain characteristic, and said compensated gain characteristic relative to said external control voltage being linear from said first reference voltage to said second reference voltage, and being linear when said external control voltage is less than said first reference voltage or exceeds said second reference voltage; and

a base band IC demodulates and decodes said adjusted intermediate frequency signal.

Newly added claim 23 and the claims dependent thereon include the features of:

a base IC that encodes and modulates an intermediate frequency signal;

an amplifier that adjusts the signal level of said intermediate frequency signal, said amplifier having a control voltage supply circuit and a variable gain circuit; said control voltage supply circuit using said external control voltage to generate an internal control voltage, said internal control voltage relative to said external control voltage from a first reference voltage to a second reference voltage being different from when said external control voltage is less than said first reference voltage or exceeds said second reference voltage; and said variable gain circuit having an uncompensated gain characteristic and a compensated gain characteristic, said uncompensated gain characteristic relative to said external control voltage being linear from said first reference voltage to said second reference voltage, and being non-linear when said external control voltage is less than said first reference voltage or exceeds said second reference voltage, said variable gain circuit using said internal control voltage to produce a compensated gain characteristic, and said compensated gain characteristic relative to said external control voltage being linear from said first reference voltage to said second reference voltage, and being linear when said external control voltage is less than said first reference voltage or exceeds said second reference voltage; and

a mixer that mixes said adjusted intermediate frequency signal with a local oscillation carrier to produce a radio frequency signal.

U.S. Patent No. 6,215,989 to Otaka arguably teaches a variable gain circuit. While Otaka arguably teaches that a gain control signal V_x varies linearly to the gain in decibel expression to obtain the corrected gain control signal V_y (column 2, lines 49-53), Otaka fails to disclose, teach or suggest at least an internal control voltage relative to a external control voltage from a first reference voltage to a second reference voltage being different from when the external control voltage is less than the first reference voltage or exceeds the second reference voltage. Instead, figures 2 and 7 of Otaka arguably teach that $V_y = V_t \ln\{\exp(b V_x/V_t)-1\}$, wherein V_t is thermal voltage, V_x is a gain control signal, and V_y is a corrected gain control signal.

U.S. Patent No. 6,127,890 to Shimomura et al. (Shimomura) arguably teaches a variable gain circuit. While Shimomura arguably teaches a first control voltage V_{IN} . Nevertheless, Shimomura fails to disclose, teach or suggest at least an internal control voltage relative to a external control voltage from a first reference voltage to a second reference voltage being different from when the external control voltage is less than the first reference voltage or exceeds the second reference voltage. Instead, figure 5 of Shimomura depicts the first control voltage V_{IN} relative to an AGC voltage V_{AGC} as being constant.

Allowance of the claims is respectfully requested.

Conclusion

For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance. (original) Accordingly, favorable reexamination and reconsideration of the application in light of the amendments and remarks is courteously solicited.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone Brian K. Dutton, Reg. No. 47,255, at 202-955-8753 or the undersigned attorney at the below-listed number.

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

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Respectfully submitted,

By 

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